

1. A car enters an interstate highway 15 mi north of a city. The car travels due north at an average speed of 62.5 mi/h. Write an equation to model the car's distance d from the city after traveling for h hours. Graph the equation.
2. A pump removes 1000 gal of water from a pool at a constant rate of 50 gal/min.
 - a. Write an equation to find the amount of water y in the pool after t minutes.
 - b. Graph the equation and interpret the t - and y -intercepts.
3. A tree 5 ft tall grows an average of 8 in. each year. Write and graph an equation to model the tree's height h after x years.

For each situation, find a linear model and use it to make a prediction.

4. There are 2 leaves along 3 in. of an ivy vine. There are 14 leaves along 15 in. of the same vine. How many leaves are there along 6 in. of the vine?

- 1. Entertainment** Refer to the diagram below. Suppose you are trying to decide whether to subscribe to cable service or just rent videos.



- a. Write an equation to model the cost y of the cable service for 1 month.
- b. Write a second equation to model the cost y of renting x movies from the video store. What is the slope? What is the y -intercept?
- c. **Open-Ended** Suppose you currently rent 8 to 12 movies each month. Graph the two equations from parts (a) and (b). Interpret the graph. Use your interpretation to choose between the alternatives. Explain your reasoning.